

The CHICAGO NATURALIST



W.J. BEECHER

Published by
**THE CHICAGO ACADEMY
OF SCIENCES**

VOL. 5 • NO. 2



AUGUST • 1942



The Chicago Academy of Sciences

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Published four times a year by
THE CHICAGO ACADEMY OF SCIENCES
Lincoln Park • Clark Street and Ogden Avenue

VOLUME 5

AUGUST, 1942

NUMBER 2



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A Cloud Forest Camp in Honduras

K. P. SCHMIDT

It sometimes seems that we of the flat prairies of the Middle West are as much in love with the mountains, when by some good fortune we reach them, as are the mountain-born. To a naturalist, the mountains may even be a goal in the course of his duties; and these may lead him to the tropics and to tropical mountain ranges with their exotically rich vegetation and animal life. The recollection of mountain camps in far off places, mellowing with the passage of years, tempts me now to a description of a most memorable one.

Perhaps some explanation is needed of how it happened that I found myself alone in the Sierra Merendon in Honduras on Easter morning of 1923. Leon L. Walters, my companion of our Central American expedition of that year was (and is still) staff taxidermist at Field Museum in Chicago. He is the inventor of a novel and completely successful method of making exhibition models of reptiles and certain other animals, which had been perfected in Field Museum's laboratories; our expedition was his first opportunity to test out his technique in the tropics and on large animals. We planned, as the principal object of our first joint work in the tropics, to collect materials for a habitat group of the American crocodiles, the largest of American reptiles, in which life-like celluloid reproductions would replace the miserable stuffed skins of the past, and in which the crocodiles would be in their natural surroundings. As for myself, after an apprenticeship in museum research at the American Museum in New York, I had just taken charge of the Division of Reptiles at Field Museum. Our reference collection was small, and it was my duty and purpose to add to it; and it was my hope that the Honduras expedition might be the first in a general program of zoological exploration in Central America. Thus our expedition represented the two major interests of a museum of natural history—on one hand the acquisition and preparation for the exhibition halls of fresh material, and on the other the attempt to increase our knowledge of the world and its inhabitants. Museum research in zoology is based on the accumulation of preserved specimens which form the *reference collection*, illuminated, when possible, by observation of the living animals in the field. The reference collection in any large museum tends to be hundreds or even thousands of times as extensive (in numbers of specimens) as the exhibition collections.

In Honduras, pending arrangements for our trip to Lake Ticamaya for our group of crocodiles, we accepted a casual invitation of an American, M. S. Miles, whom we had met on the train to San Pedro Sula, and established ourselves on his near-by ranch. While referring

to us as gringos, often with some dubious Spanish adjective prefixed, our genial ex-American host and our Indian hostess Lola took an immediate liking to us. We were too much given (they thought) to hunting lizards in the sun, when we should have joined in the customary siesta; and, when we should have been asleep, safely shut away from the night air, we were out hunting such small game as frogs and sleeping lizards and nocturnal snakes with head-light and placental forceps. To Lola we were not a little mad; but she was charmed with



A palm-thatched shelter in the Sierra Merendon.

Mr. Walters' skilful taxidermy and plaster molding. Santa Ana, our host's small dairy ranch, a few miles from the city of San Pedro, lay at the very base of the towering Sierra Merendon, whose six thousand foot range forms the boundary between Guatemala and Honduras. Situated at the mouth of the canyon of the Santa Ana river, we had found it a good base of operations for our studies of the natural history of the tropical lowland. It was not without serious drawbacks in the way of ticks and other "bichos"; but collecting was so productive, and our evenings so pleasant with our host's conversation and Lola's concern about our ravenous appetites, that the stay we had intended to be a week lengthened into four.

Our host had warned us of the superstitious extremes in the Honduran observance of Good Friday, thinking, perhaps, that we might choose that day for some activity which would be understandable only to naturalists. It would fall to him to get us out of whatever trouble we got into, and he preferred a restful holiday on his porch at Santa Ana to needless worry about his two visitors. With Miles' warning in mind, we thought of a veritable retreat, discovered on our first trip into the mountains. A sarsaparilla hunter's palm-thatched shelter on the shoulder of the mountain, four thousand feet above us, stood just at the level of the underside of the clouds that gathered around the peaks in the afternoon, even in this driest of dry seasons. The "sarsero" would not be there, and we might spend Holy Week and Easter in his hut if we liked, and in our own way. The hut was well located for collecting frogs and lizards and small mammals in the cloud forest zone; we must soon get at our work on the crocodiles; and our small mountaineering expedition was quickly planned.

Our gear amounted to one good burro load, including blankets and food for the week. Lola spent half a day making biscuits which composed our bread supply; there were bottles and vials of alcohol for the small creatures we would pursue, and even a few mouse-traps. Our diet for the week was to be mainly one of rice and beans; for once we were traveling without our usually excessive impedimenta. Antonio, detailed from the ranch, drove the protesting burro up the trail, which led first to an Indian village (from which Lola had come), situated on the slope of the mountain a thousand feet or so above the plain.

The Sula plain, on which we now looked down, is largely cleared of its original forest. The remaining vegetation is characterized by cohune palm, and by the giant silk cotton trees, which often dominate the landscape, left standing in the man-made savannas. Above Lola's village we soon left the last of the lowland vegetation, entering a zone of pine and oak, with much drapery of Spanish moss. We found the trail good to the four thousand foot level, where a vegetable garden had been laid out in a small clearing. This, we learned, supplied vegetables, principally cabbage, to the city on the plain below. The climate was already notably cooler and more humid. The black soil was damp, and it was not surprising that vegetables of the temperate zone should grow better here than on the hot and dry lowland plain. Above the cabbage patch the path soon became obscure. It was now merely the game trail present on every ridge, and it was presently too much overgrown to be cleared out for the burro even with our machetes. When we were within a half-mile of our proposed camp we unloaded the baggage, and sent Antonio and the burro back to the ranch with instructions to return on the next Saturday afternoon. Packing our equipment and supplies on our backs over the last stretch of trail took

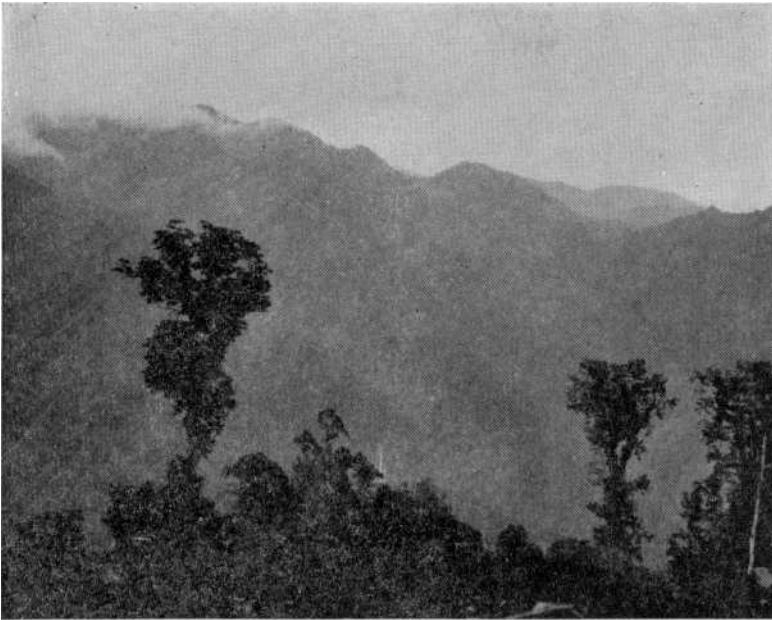
us until nightfall; we had a frugal supper of biscuit and bacon; and were soon asleep on the ground beside our fire. We were to have the week alone in the cloud forest of the Sierra Merendon, in an environment equally beautiful and novel. We were in fact at the lowermost "cloud level," where the undersides of the flat bottomed cumuli drifting in from the Caribbean, or forming in upwardly deflected currents of the trade winds, impinge on the shoulders of the mountain. Tropical mountains, even more than those of the temperate zones, and especially those in the latitudes of the trade winds, tend to have their peaks swathed in such cloud masses.

Our hut was situated far out on the projecting shoulder of the mountain, so that when the fog lifted, we could see across the mile-deep valley of the Santa Ana. A silent white gash on the opposite side marked a waterfall. Such glimpses of the outer world, even in the forenoons, were rare. Usually the clouds rolled in and wrapped us in a silent fog through which we could see no more than thirty or forty yards. The open hardwood forest extended for more than a thousand feet above our camp, until, at the ridge, it became a tangled thicket of stunted trees covered with mosses instead of by the larger epiphytes. The ridge itself was everywhere a game trail, marked with the sharp footprints of deer and peccary, and often by the unmistakable tracks of the tapir. These larger animals range upward into the mountains from the lower levels. The case is quite different with the smaller creatures.

The change in the animals and plants from the oak and pine zone below the cloud level to those of the "cloud forest" in which our camp was situated was extraordinary. The lovely green toucans which came in flocks to fruit trees were wholly different from those of the tropical plain. Bird voices filled the air, among them most notably that of an ant thrush, whose liquid organ tones equalled in beauty those of our thrushes at home. The oak and pine had disappeared, to be replaced by hardwood trees of great variety, intermixed with numbers of tree ferns and dwarf palms from fifteen to twenty feet high, which formed an intermediate small tree level in the forest. Most striking of all was the clothing of the trees by epiphytes, the air-plants which perch on limbs, even on vertical trunks, and on the stems and festoons of the lianas. In addition to a variety of orchids, these air-plants were in the main plants of the pineapple family, properly known as bromeliads, exhibiting their relationship in the whorls of leaves clasping each other at the base.

It was soon evident that the objects of our particular interest, the amphibians and reptiles, were as distinct from anything we had previously seen as were the birds and the plants. The tiny spring which supplied us with water yielded numerous specimens of an extremely rough

skinned frog of the tropical genus *Eleutherodactylus*, a group of frogs notable for the fact that the tadpole stage is suppressed in their development, which takes place in their pearl-like eggs laid on land. A very different black-cheeked and smooth-skinned species of the same group was found hopping over the damp leaf mold of the forest floor, resembling nothing so much as the wood frogs of our temperate Illinois and Indiana region. At night a note like isolated strokes on a tiny silver bell was heard on all sides of us. It was extremely difficult to trace, but proved to belong to a tree frog which was most frequently found in the bases of the bromeliaceous air-plants. This led to the further



View across the Santa Ana valley.

discovery that this hyla was engaged in laying its eggs in the water contained at the bases of the leaves of these plants. The bell-voiced hyla and the warty *Eleutherodactylus* both proved to be undescribed species when examined in the laboratory.

The examination of the bromeliad plants for the hylas led to an unexpected discovery of salamanders which seemed to be wholly confined to this situation. There were two species of these tailed amphibians (both of the Central American genus *Oedipus*), one remarkable for its small size, with a total length of about three inches, and for the extremely large nostrils in the males, which, since they are little

developed in females and young, proved that we had adult specimens before us. These small creatures were often found in the same plants with a second much larger form, which turned up in two color phases, one brownish with lichen-like markings, the other uniform pale red. These two species of tree-climbing salamanders, found in air-plants often many feet from the ground, were best obtained by chopping down trees (laboriously enough) with the machete.



A drapery of epiphytes on tree-trunks and lianas characterizes the cloud forest.

The bromeliads with the water contained at the base of their leaf-whorls form one of the notable environmental "niches" in the forests of this cloud zone, with a characteristic animal life of its own. The animals of the bromeliads form a more or less stable community, dependent on the conditions which characterize the plants and with a measure of interdependence, at least to the extent that some feed on others. Standing water is scarce on tropical mountains, and the permanent presence of water at the bases of the leaf-whorls of the bromeliads is a consequent attraction to aquatic forms, and to those which require moisture for their soft skins, like our salamanders. When a bromeliad is cut down, its base cut off with the machete, and the leaves pulled off one by one, some of this animal life comes to view. The water often

has a deposit of mud where the leaves are closely pressed together, and in this are found good-sized earthworms and minute nematode worms, probably of several species. In the water where the leaves spread apart are the tadpoles of the hyla and the larvae of a damsel fly. In the somewhat drier leaves one finds excessively flattened beetles, and numerous other insects, especially true bugs (such as stink bugs). Even the drier upper part of the plant has its characteristic animals, especially an extremely abundant brown daddy-longlegs. More detailed examination would yield a still more varied list of animals.

Both of the bromeliad salamanders proved to be new species, and it was borne upon us even in the field that we had discovered a mountain top whose animals composed a distinct fauna, isolated in the distinctive cloud forest conditions from the same zone on other mountains by the broad river valleys to the north and south. It is one of the simplest and most striking of the principles of species formation—and in other words, of active evolution—that isolation of any kind, in insular patches of cloud forest quite as much as on oceanic islands, is accompanied by the development of distinct forms of animals confined to such areas.

Reptiles, in contrast with the amphibians, were few. We shot a fence-lizard from one of the posts of the hut, and a shiny green lizard dropped to the ground out of the thatch, perhaps driven out by the smoke of the camp fire. The latter was a fine new species of the genus *Celestus*, of the remarkable lizard family to which the alligator lizards and the so-called "glass snake" belong. The fence lizard was named for me by a colleague specializing on this group, but we now believe it to have wandered upward from its proper home in the oak-pine zone, and to represent an eastern population of a Guatemalan species. A spotted snake, harmless enough, though with grooved poison fangs at the rear of its jaws, was found crawling in the small separate shelter in which I slept. There were none of the vastly abundant lowland lizards of the race-runner type and none, even, of the anoles which are elsewhere the most characteristic lizards of the Central American tropics.

Traps set out for small mammals yielded a brown-backed mouse and a small pocket gopher. We had only a few traps and we were fully occupied with other duties; but our few small mammals were equally as interesting for their isolation in the cloud forest as our salamanders and frogs. The mouse remained unidentifiable until my brother and I collected specimens of its nearest relative in Guatemala ten years later; it has now been distinguished as a species confined to the Sierra Merendon.

The distant howling of spider monkeys was the principal sign of the presence of mammals by day. We had one of the strangest of mammalian visitors at night. Awakened from sound sleep by an unearthly

scream, which raised us bolt-upright from our blankets, we were instantly awake. The dreadful wailing sound was repeated from closer and closer stations. We nervously got out our headlights and the shotgun, and thought at first of the possibility that it might even be a jaguar, the "tigre" of the Spanish speaking Americans. Presently the voice came from a gigantic tree close to our hut; and the headlights turned in its direction disclosed a pair of enormous dull red eyes. Leon fired; the eyes disappeared, and there was a resounding crash on the pile of broken branches below the tree. We desperately tried to locate our animal, but were caught in an all but impenetrable tangle of broken branches, lianas, and thorny bushes, and our quarry escaped. We hope it may have been more frightened than hurt, for it was (as we later learned) a kinkajou, known in the English of British Honduras as the "night-walker," and in Spanish everywhere as the "mico de noche," the monkey of the night. The kinkajou, thought to be a tropical relative of the raccoons, is remarkable for its monkey-like face and prehensile tail, more raccoon-like in its insatiable curiosity and in its high level of intelligence. It was known to us as an extremely amusing and appealing animal, though our acquaintance with an individual kept as a pet in the boarding house in Belize.

With much to do toward making molds of the bromeliad creatures for future exhibition of the "bromeliad niche" in Field Museum, Leon Walters returned to the hacienda on Saturday. I stayed on alone, partly for love of our mountain camp, partly to add still further to our collection.

A more poetic command of language than mine would be necessary to convey in words the feelings of a naturalist alone in a primeval wilderness, on a mountain which he had come to think of as in some sense his own, surrounded by the fellow creatures to the study of which he devotes his life, and in a setting so extraordinary. The silent fog, lifting for a momentary glimpse across the valley; the voices of ant-thrush by day and of bell-voiced hyla at night; the fascinating microcosm of the bromeliad epiphytes; the flocks of great-billed green toucans, incredibly appropriate as markers of the cloud-forest zone; the varied forest with its singularly graceful dwarf palms and still more beautiful tree ferns; the drapery of lianas, draped in turn with orchids, bromeliad, and moss; all these produced an enchantment never to be forgotten.

This was the setting for Easter morning in the Sierra Merendon. I rose at dawn for my frugal breakfast on the last of our supplies. The sky was clear and roseate to the east, over the shoulder of the mountain, and as the sun rose in this gorgeous setting, who could resist the poet's worship of the rising of the sun, with its injunction to bathe one's breast in the rose of dawn?

Bird- Words

E. R. FORD

So you think that the jay, calling, tells his name. Sorry, but you're wrong. His name, because of his bright dress, comes from the French "gai," which, by assibilation, became jay. Color, it seems, is responsible for the names of 28 of the 212 common family names used to describe the more than 750 species of North American birds. You all are familiar with bluebird, blackbird, cardinal, redhead, redpoll, yellowlegs and the like. And with baldpate and canvasback—names due to the color pattern of the plumage. Most of you know, too, that kingbird and kinglet are so called because of their bright crests which are fancifully likened to royalty's crown. But what of oriole, phainopepla, mallard, brant, bunting, grouse, eagle, verdin, wheatear? Let us see how color is responsible for these names too.

Oriole is from the Latin *aureolus*, golden or gilded; phainopepla is from the Greek, meaning "a shining robe"; mallard may come from the French dialectal form, "maillard" (apparently from *maille*, a spot), or from an Anglo-Saxon word for mail, a spot, especially a spot on a bird's feather; brant or brent is, probably, the equivalent of "brand"—a partly burned stick of wood—and the name seems to refer to the bird's light and dark pattern. Similarly bunting may be from the German *bunt* (spotted, speckled) or from Latin *punctus*—pricked (dotted). Grouse is possibly a false singular of "grice" (after mouse, louse, etc.) or "grise," from an old Saxon word meaning gray. And eagle?—probably from its dark brown color. *Aquila*, the Latin name, is feminine of *aquilus*, meaning dark-colored, brown. Verdin, of course, is from the French *verd* or *vert*,—green. But wheatear tells a misleading story. The name is, essentially, "white-rump."

Among the 47 family names derived from the voice or cry we find chicken, as in prairie chicken, and hen, as in sage hen. By no means is the connection obvious. But "chicken" is asserted to be from the Anglo-Saxon diminutive of "coc" (whence cock), an imitative word for crowing or chucking. And "hen," from Anglo-Saxon "henne," is an equivalent of the Gothic word for cock, *hana*—literally, "the singer." Thus "chicken," neuter, and "hen," feminine, seem to get their names through the voice of Chaucer's bird who "cryde anon, cok, cok!"

Birds in this group, whose names are clearly imitative of their well-known calls, are bobwhite, bobolink, chickadee, chuck-will's-widow, whip-poor-will, cuckoo, dickcissel, flicker, killdeer, pewee, towhee, veery, willet and others. Altogether there are 22 such names. Crow, crane, grackle, heron, owl, rail, raven, rook—all are due to the guttural quality of the bird's voice. The catbird cries like a cat, the mockingbird mocks,

the shrike "shrieks," the warbler warbles, the tattler is a tell-tale (from the hunter's viewpoint), the accenter accents and the nightingale "gales" (old English) or sings at night.

Because they resemble some other form thirteen family names have been bestowed accordingly. Cormorant (medieval Latin, *corvus marinus*) is a sea-crow; gannet, often called solan-goose, is likened to gander; gallinule is "little hen," from *gallinula*, diminutive of the Latin for hen. The vireo is a greenish bird whose name is Latin, meaning green-finch. The water-turkey is a water-loving bird with somewhat turkey-like plumage. A water-loving warbler resembling a thrush is, naturally, a water-thrush. Nighthawk hunts, or "hawks" at night. Wren-tits have a superficial resemblance to wrens and, also, to tits.

The food or prey of birds is another derivative source of their names. Flycatcher, gnatcatcher, kingfisher, nutcracker, nuthatch, oystercatcher, sapsucker and seedeater are examples. We may include osprey (from Latin *ossifragus*, meaning "bone-breaker") whose food is fish, the bones of which, one supposes, are broken in the process of ingestion. A goshawk is a "goose-hawk"—probably because it was used by falconers to fly at wildfowl. Hawk is alleged to be from the root *haf* of an Anglo-Saxon word meaning "to heave," in its early sense of to take or seize.

Billy Goat, Tom Cat, Jack Ass—mankind always has been fond of giving such appellations to familiar creatures. So, too, we have Robin, Magpie (i.e., Mag the pied one), Martin and Petrel (little Peter). The name of the latter might be ascribed, indirectly, to its flight, which makes it appear to walk upon the surface of the water as did the apostle. Dowitcher is "*Deutscher*," a name used by fowlers to distinguish it from the jack-snipe, or "English" snipe. The grotesque and amusing behavior of parrots and paroquets tells us that they were named for Pierrot. But it is an excess of familiarity to call a bird an old squaw.

Eleven family names derive from some character of habitat, association or solitude. Thus brambling (of brambles or briers); bush-tit (bush-inhabiting titmouse); cowbird, meadowlark, surf bird, woodcock, tree-duck, sanderling, solitaire and one or two more.

Two characters are expressed in six of the names contained in our list. Examples are sandpiper and grassquit (habitat and note), red-start (color and action) and goldfinch (color and note)—"finch" being given as probably an imitative word.

Anthropomorphic names are booby, dotterel, and loon, indicating supposed stupidity or foolishness.

Physical characters, other than color, account for bufflehead, cross-bill, grosbeak, pintail, rough-leg, spoonbill, stilt, longspur and others. Coot and grebe apparently are from Celtic words, one meaning short

(or bob-tailed) and the other a crest (or tuft of feathers). Egret, too, from the French, means a cluster or tuft.

Creeper, dipper, duck, limpkin, lapwing, road-runner, shearwater, skimmer, swift, turnstone and woodpecker relate, of course, to action in flight, in the pursuit of food or, as in the case of the hummingbird, the noise of the wings in motion. Scoter is, probably, scooter, jaeger is the German word for hunter and trogon is from the Greek, to gnaw or chew.

Only one name, ovenbird, relates to the nest or nesting habit.

Godwit (for "good creature") and knot, alleged to be named for King Canute, because of his fondness for its flesh, seem plausibly explanatory to the layman; but lexicographers are of sterner stuff and regard the evidence as specious. Indeed the danger of accepting the apparently obvious is found in the derivation of merganser. Naturally one may assume it to be from the German "mer ganser," or sea goose, but, according to authority it is from the Latin words *mergus*, a driver, and *anser*, a goose.

The origin of many names of birds is unknown or uncertain, junco and crane being among them. Ani, jacana and tanager are Brazilian and possibly are names used by aborigines. Plover is ascribed to the medieval Latin, *pluvius*, a plover, so called because it appears in the rainy season. Turkey, meaning Tatary, or, vaguely, Asia, from which the bird was supposed to come, explains the name of our Thanksgiving fowl. Fulmar is from foulmart (foul marten) an old name for the polecat, and the bird was so named from its habit of emitting a malodorous oil when handled.

Perhaps, among our readers, there may be some curious ones who would like to know what characters of birds so impressed the peoples who named them as to be reflected in these titles; and to know, too, the order in which these characters thus prevailed. Here, then, is a table:

Names derived from the voice	47
Names derived from the color, in part or as a whole.....	28
Names derived from physical characters other than color.....	23
Names derived from habit of flight or other movement.....	21
Names derived from resemblance to other forms.....	13
Names derived from habits relating to food.....	13
Names derived from character of habitat or association.....	11
Sobriquets; as Robin, Martin, etc.....	10
Names derived from two characters, as, e.g., color & voice.....	6
Anthropomorphic	3
Names derived from supposed place of origin.....	2
Names derived from nesting habit	1
Names derived from odor	1
Names derived from season	1
Total.....	180

Thus we have attempted to account for a considerable majority of the 212 common family names employed in the 1931 (latest) edition of the American Ornithologists' Union's *Check-list of North American Birds*.

To arrive at our conclusions we have used *The Century Dictionary* which, naturally, is not, on all points concerned, in agreement with other authorities. The "path" of the word may be lost in antiquity. Frequently its origin is unknown. Sometimes it has come from Greek, medieval Latin, Icelandic, Celtic and other ancient tongues, but that is all that is certainly known. Of its original meaning, of the reason for its use, we have yet to learn. There is interesting material in these "bird words." We read that albatross is from the Portuguese *alcatraz*, meaning a sea-fowl, and we know at once that our isolated Federal prison is built on the ancient nesting site of maritime birds.

Ibis is an Egyptian word and mynah is Hindustani, meaning starling, but the origin of the first is unknown and of starling we know, only, that is from the Anglo-Saxon "stare"; and we must still ask why did they call the bird a "stare"? Evidently, for long and long, goose and lark, partridge and swallow, thrush and wren, with many changes in etymology, have borne these names; and, perhaps, the ancient peoples, from whose tongues we seek to learn why they were used, did not themselves know.

Test Your Nature Lore

True or False?

1. The above-ground part of the cactus is composed of thickened leaves.
2. The water lily is a member of the lily family.
3. The witch hazel blossoms and ripens its seeds in one growing season.
4. A nail driven into a tree at a point twenty feet above the ground will be the same distance above ground years later.
5. New leaves emerge from old leaf-scars in the Spring.
6. Tree buds first begin to form in late Winter and early Spring.
7. Corn "silk" is a floral part.
8. Cottonwood leaves are capable of greater rotational movements than most tree leaves.
9. The green scum in water is moss.
10. Bracket fungi are harmless to the tree on which they grow.

(Compiled by Anna Pedersen Kummer)

Answers on Page 39

Museum Activities

New Trustees

At the annual meeting of the Board of Trustees, May 18, 1942, Thomas D. Heed was elected a Trustee of the Academy for a term of seven years to succeed James R. Offield whose term had expired and who, because of ill health, did not wish to be re-elected. William D. Cox was also elected a Trustee to fill out the unexpired term of Robert J. Thorne who recently moved to California.

Lobby Exhibits

Food for our fighting forces, an exhibit presented through the cooperation of the Chicago Quartermaster Depot, was on display in the lobby to August 10. The training of bakers and the testing of foods were shown in photographs; emergency field rations developed during the last few years, together with standard containers and equipment, were shown by actual samples.

Field Ration "C" consists of previously cooked food, such as stew or hash, sealed in tin cans, each accompanied by another can containing biscuits, candy, sugar and soluble coffee. For times of greater emergency, Field Ration "K" was developed; it is packed in three boxes, one for each of the day's meals. In extreme emergency, Field Ration "D," a small super-energy chocolate bar, is supplied. It is so rich that instructions are given to eat it over a half-hour period.

A series of photographs showed the dehydration of various foods; by eliminating the water from potatoes, milk, eggs, cabbage, etc., the volume can be reduced to as little as one-tenth of the original, thus simplifying the transportation of these foods over seas.

Another case in the Museum lobby displayed study skins of mammals common in the Chicago area.

At present the exhibits deal with recent advances in research on hay fever. These are presented through the coöperation of Dr. O. C. Durham of the Abbott Laboratories in North Chicago and of Anna Pedersen Kummer, honorary curator of botany at the Academy. Shown are the "sky-hook," which collects pollen while suspended from a moving airplane, "gravity block," on which pollen is allowed to fall freely and photographs of a newly devised pollen sampler which operates by clockwork, forcing a stream of air through a small opening onto a slowly moving microscope slide. The amount of pollen per cubic yard of air is shown on a day-by-day chart.

Dr. Durham finds that burning bush, a weed introduced from Europe and a source of much hay fever pollen, is spreading rapidly in the Chicago area. Mrs. Kummer showed us two very healthy looking plants in our own front yard!

Another exhibit includes a number of portraits of reptiles by Dr. Gloyd, who is generally regarded as one of the foremost photographers of this group of animals.

Dr. Gloyd Receives Honorary Degree

At the Seventy-seventh Anniversary and Commencement of Ottawa University on June 1, Dr. Gloyd, director of the Academy Museum, received the honorary degree of Doctor of Science. Dr. Gloyd graduated from Ottawa in 1924 and was a member of its faculty for three years.

Recently subscriptions for *The Chicago Naturalist* were received from the libraries of ten Chicago high schools. It is gratifying to know that this publication may contribute to the education of some of Chicago's future citizens.

Scientific Publications

Since the last issue of *The Chicago Naturalist* two additional numbers of the *Bulletin* have been published: Volume 6, No. 10, "Notes on the Young of Three Recently Described Snakes, with Comments upon their Relationships," by Roger Conant, Curator of the Philadelphia Zoological Garden, and No. 11, "Amphibians and Reptiles of Jackson County, Missouri," by Paul Anderson of Independence, Missouri.

The *Bulletin* is regularly sent to libraries and other institutions with which the Academy maintains exchanges. A reserve supply of each issue is retained for future exchanges and the remainder of the edition offered for sale at a nominal price. Active members of the Academy may obtain these papers without charge upon request.

Staff Notes

Dr. Eliot C. Williams, Jr., assistant to the director, entered government service with the armed forces early in June. He was assigned to the Army Medical Corps and stationed at Camp Grant, Illinois, for a few weeks but is now on maneuvers in the South.

Dr. Donald C. Lowrie, formerly an assistant curator at the Academy, is employed as purchasing agent for a construction company now engaged in government work at the Great Lakes Naval Training Station.

Joan Markham recently resigned her position as secretary to the director because of a serious illness in the family requiring her presence at home. She was succeeded by Leigh Williams Havas.

Notes from the Field

During the early part of July I had opportunity to spend two weeks on Blue or Rusk Lake, 6 miles southwest of Minocqua, Oneida Co., Wisconsin, where, in the nesting territory of bluejays, cedar waxwings, chickadees and juncos, I was fortunate in being able to observe several interesting behavior patterns among the birds.

Throughout the day groups of waxwings flew about among the Norway and white pines and out over the water. Only rarely was a single individual seen—apparently the flocking instinct, so evident in the migrating birds seen in the Chicago Area, appears as soon as the young are able to fly. A rather heavy flight of stoneflies contributed substantially to the diet of the waxwings.

A single great blue heron, easily recognized because of a missing primary or two, made the lake his fishing grounds, wading about in the shallower water or standing quietly on one of the docks along the shore. The lake abounds in the smaller forage fish, so I imagine that he was well fed. This bird one day gave me a momentary spurious thrill. Hearing a peculiar honking cry, I looked up to see a bird the size of a heron flying with its neck held straight out in front like a ramrod. "Sandhill crane," I thought. But at the same moment some bluejays across the lake set up a terrific clamor. Looking at another part of the sky, I saw a bald eagle soaring. A quick glance back at my "crane" revealed that the heron had pulled his neck back into its customary S-shape and was flying hurriedly off. The eagle soon soared out of sight. What part a straightened neck might play in the heron's escape I do not know, unless it may enable him to see better.

D. M. Hatfield

The Naturalist's Book Shelf

PAGEANT IN THE SKY

By Raymond S. Deck

Dodd, Mead and Co., New York, 1941, 268 pages,
24 illust. \$3.00.

Subtitled "A book of the modern sport of bird-watching," this volume is a refreshing and thoroughly pleasing exposition of the importance of birds. An altogether charming prelude, "Salute to a Brown Bird," will endear the author to most readers at once, and the intriguing headings of its seventeen chapters promptly catch one's interest. A Pan-American viewpoint is suggested in "Wings over the Western Hemisphere," and who can resist "Mystery Bird," "Dead End," and "It Runs in the Family"?

"Wild Birds in your Garden" is a delightful essay on the pleasures of having bird neighbors and gives some really useful suggestions (including an "honor roll of shrubs") to those who wish to increase their enjoyment in feathered companionships.

"The Melting Pot" refutes the view that the city-dweller must go far afield to enjoy birds; "Here Comes the Bride" describes bird songs, courtship behavior, selection of nesting sites, and many details of avian household economy. "The Sportsman's Credo" presents an impressively sane viewpoint on game bird developments and "control" of predators; "Rings on her Fingers" describes bird banding; "History's Roll Call" deals charmingly with vernacular names; and "Vainly the Fowler's Eye" is an eloquent but non-sentimental appraisal of the refuge movement.

The "browser" who might lay it aside as just another bird book would be wrong. This one has a special charm: a freshness as pleasing as a summer shower. Mr. Deck believes that birds are important to everyone

and "to establish this thesis in a thoroughly friendly way is the ambition of this book." Friendliness is perhaps its keynote, for the author reveals a deep sympathy with all wild creatures and with his fellow men.

H. K. Gloyd

FUNDAMENTALS OF PLANT SCIENCE

By Sister Mary Ellen O'Hanlon

F. S. Crofts and Company, New York, 1941, xi - 488
pages, 264 figures. \$4.25.

The first portion of the book is recommended by the author for those taking a shorter course in botany at the college level; the entire book is intended to involve a year's work. Part one includes material necessary for working concepts of plant morphology, classification, and anatomy. Physiology and ecology, as in other text books similarly designed, receive only incidental attention; their modern exponents will doubtlessly soon call attention to this. Part two treats of the Phyla and their relationships (with new and interesting charts), genetics, organic evolution, and botanical history.

The book has been written with exhaustive thoroughness. Probably teachers will not dare hope that students will master all of the terms and ideas presented; nevertheless, such diligence would result in scholarliness and facilitate later learning.

Plant material outlined for use appeals because it is well-nigh universally common. Suggested investigations and up-to-date references at Chapter ends have been selected with such care that students will surely be stimulated to follow out at least a few of them. Throughout the book there are religious references which relate the plant kingdom to the purposefulness of the Creator.

Anna Pedersen Kummer

THE ANTARCTIC OCEAN

By Russell Owen

Whittlesey House, McGraw-Hill Book Company, Inc., New York, 1941, 254 pages, illus., index. \$3.00.

This volume is the second in the Whittlesey House series on the oceans of the world. It is a book of exploration and adventure on the "under side of the world." The author traces the history of antarctic exploration, using those expeditions which definitely added to the knowledge of the Antarctic. Readers of this authoritative volume written by a newspaperman who accompanied the first Byrd Antarctic Expedition in 1929-30, will learn a great deal about a little known portion of our globe. Excellent photographs set the stage very well for a trip to the Antarctic.

Eliot C. Williams, Jr.

REPRESENTATIVE NORTH AMERICAN FRESH-WATER FISHES

By John T. Nichols

The Macmillan Company, New York, 1942, 128 pages, 60 drawings (30 in color), 4 x 6 1/2. \$1.25.

Going fishing? Then here is a pocket handbook to take along so you will know what you catch, something of where to fish for it, and what may be used for bait. Weights and measurements are given, along with relative palatability.

An excellent handbook for fishermen, this also will prove valuable to anyone interested in fishes other than gastronomically.

Donald M. Hatfield

MANUAL OF APPLIED NUTRITION

The Johns Hopkins Hospital, Baltimore, 1941.

The Dietary Department of the Johns Hopkins Hospital compiled this manual for the use of the visiting and house staff, nurses, dieticians and medical students. As the success of diet therapy depends upon the food order fulfilling the needs of the individual patient, it includes no "diet lists." It is a very serviceable guide but too technical for use by non-professional workers.

N. S. Davis

PLANT FAMILIES— HOW TO KNOW THEM

By H. E. Jaques

The Author, Mt. Pleasant, Iowa, 1941, 174 planographed pages, 428 figures. \$1.50 spiral binding, 82.50 in cloth.

The student who has familiarized himself with such botanical structures as calyptra, capillitium and perianth will find described in this Handbook a survey of the plant kingdom within the range of his probable contacts. The analysis of at least some structures differs from that used in the classics on taxonomy. For example, the figured hypogynous flower shows stamens inserted upon the summit of the ovary. The families Juncaceae, Xyridaceae, Eriocaulaceae, Pontederiaceae, Bromeliaceae, Liliaceae and Commelinaceae are keyed under this diagram, a situation with which our two Northeastern Flora do not agree in either illustrations or description. In the student's acquaintance with the legumes of the texts, the stamens are given as diverging from the floral axis below the pistil although the filaments may be more or less united. To this he will have to reconcile the apparent situation which guides him in this Key, viz., "stamens usually arising around or above the ovary."

There is a phylogenetic list of the families of plants, an index and pictured glossary. There are 528 figures to illustrate the flora, the drawing of which is alone a gigantic task. The collection of the plant material, the preparation of the microscope slides and the preservation of the specimens from which the drawings were made represents a monumental amount of work.

Anna Pedersen Kummer

Note

All books which are reviewed in *The Chicago Naturalist* are placed in the Reading Room at the Academy and are readily available to all who might like to read them.

THE SEASHORE PARADE

By M. L. Guberlet

The Jaques Cattell Press, Lancaster, Pa., 1942, 197 pages, 58 line drawings, 6 color plates, 5 3/4 x 7 3/4. \$1.75.

Written in a breezy, personal style, this book is almost certain to please children up to fifteen years of age. The many often far-fetched comparisons between the behavior or structure of seashore inhabiting animals and those of man will in all probability be too much for older children to take. It is, for instance, difficult to comprehend how jelly fish "without teeth, without eyes, without taste [?], without everything [!]" can "... take careful note of the outgoing and incoming waters." There is a great deal of such fanciful writing in the book.

The pattern followed is, roughly, from the primitive to the more advanced, beginning with plankton and ending with the crustacea. The book contains a wealth of information on seashore forms and the illustrations are very good. One is particularly grateful that none of the animals is drawn to resemble a human being!

Donald M. Hatfield

PRAIRIE DOG TOWN

By Margaret T. Raymond and Carl O. Mohr

Dodd, Mead and Company, New York, 1942, vi-57 pages, 23 photographs, 15 line drawings, 6 3/4 x 9. 51.50.

A background of technical knowledge resulting from considerable research and a series of excellent line drawings by Dr. Mohr, a remarkably interesting text by Miss Raymond, and a number of good photographs by J. W. Jackson and W. E. Fair combine to make this a book from which little more could be desired. It relates the story of one Mr. Prairie Dog, from birth to three years old when, "It is a good life, and he looks forward to it eagerly."

After reading the book from cover to cover I was surprised to note on the jacket that it was designed for children of 7 to 11 years. It would seem to suit a much greater span of age than that.

The offset reproductions are good, except that the picture on the jacket is overly retouched.

Donald M. Hatfield

Test Your Nature Lore

Answers to questions on page 34,

1. False. The conspicuous cactus is stem. Leaves, when produced, are very small and soon fall off.
2. False. They are no more related than our corn and oak.
3. False. The flowers appear in late autumn but the fruit is not mature until the end of the following growing season.
4. True. Increase in height of trees is accomplished in the terminal bud or region only.
5. False. Leaves are always formed in buds.
6. False. Buds are initiated the preceding growing season in the axils of the leaves.
7. True. It receives pollen and is therefore the stigma.
8. True. The leaf-stalk is flattened from side to side which causes the blade to respond to the slightest air- movement.
9. False. This growth is composed of algae which are often branched and may be attached or free-floating.
10. False. Brackets and mushrooms on trees are fruiting bodies of infesting fungi which have already extensively invaded the tree tissues.

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